

Woodward-Clyde

4582 South Ulster Street
Denver, Colorado 80231

Fax Cover Sheet - Confidential

DATE:	December 11, 1996	TIME:	9:33 AM
TO:	Dolly Potter Solvay Minerals	PHONE:	(307) 872-6571
		FAX:	(307) 872-6510
FROM:	David Gaige Air Program Manager	PHONE:	(303) 740-3872
		FAX:	(303) 694-3946
RE:	Attached Meeting Notes		

Number of pages including cover sheet: 15 | 6

Message

Attached are the meeting notes as I recall them. Please review. I suggest we send the meeting notes to Kvaerner Davy as confirmation of the information. I didn't end up with a copy of your final handout. I attached a copy of the draft you sent me, so please exchange it before you send it out. If you have any changes, corrections, or additions, please feel free to make comments.

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Woodward-Clyde**Memorandum**

To: Dolly Potter

From: David Gaige, P. E.

Office: Denver

Date: December 10, 1996

Subject: Plant Expansion - Starstrike

A meeting was held with Kvaerner Davy on December 5, 1996 to discuss the information requirements for the Air Quality permitting. The information requirements are summarized on the attached handouts. During the meeting, it was discussed that the goal is to have the permit application submitted in mid-January of 1997. Based on the schedule for some of the information, this may be delayed until mid-February, but every effort is being made to maintain the January schedule.

We indicated that the following information is required by mid-December to allow us the opportunity to perform initial modeling this month.

- Identification of each new emission point
 - UTM location
- Emission parameters for each emission point
 - stack height and diameter
 - exit velocity
 - temperature
 - moisture
 - emission rate (both lb/hr and t/yr)
- Building dimensions
- Plot plan showing new fenceline

In early January the information required for developing the BACT will be required. This includes cost information for alternative levels of particulate control for the calciner and the dryer, and the screening baghouse. The alternative levels of emissions will be:

0.01 to 0.015 gr/acf for baghouses

0.01 to 0.015 gr/dscf for ESPs

In both cases the intent is to require a base bid for control to the 0.015 level and request information concerning the additional cost to achieve the reduced emissions associated with 0.01. The capital equipment cost information will be used to develop total installed costs, and annual operating costs using estimating factors.

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Dolly Potter

December 10, 1996

Page 2

It was discussed that the state of Wyoming uses method 202 to determine compliance with particulate emissions, and any performance guarantees should be based on this test method.

It was also discussed that the BACT discussion will present low NOx burners as the selected technology for NOx control and will list 0.05 lb/mmBtu for the Calciner. Because refractory is required for the low NOx burner design, but is not feasible in a dryer, the NOx level will be proposed at 0.18 lb/mmBtu for the dryer.

The discussion of VOC control will parallel the discussion prepared by URS in February of 1996, which addresses Catalytic oxidation, carbon adsorption

condensation, thermal decomposition, wet scrubber, and good combustion practices and concludes that good combustion practices are the only alternative that is technically and economically feasible.

CDG

Air Quality Permit Requirements Solvay Soda Ash Joint Venture Expansion II

Dolly A. Potter
Environmental Engineer
Solvay Minerals, Inc.

David Gaige
Air Programs Manager
Woodward Clyde Consultants

December 5, 1996

General Permit Information Requirements

- ★ **Drawings (Process Flow, General Arrangement, etc.) to include:**
 - **Product Flows**
 - **Fuels Flows**
 - **Emissions (with all applicable pick-up points)**
- ★ **Site location map**
- ★ **Plot plan, including:**
 - **All emission points (existing and expansion)**
- ★ **Brief description of process**

Modeling Information Requirements

- ★ Plant site boundaries (restricting public access)
- ★ Building dimensions:
 - Both existing and expansion
 - Elevations (ft)
- ★ Location of each building and emission point - *Apparent*
 - UTM Grid (Universal Transverse Mercator)
- ★ Emissions information as noted below

Emission Point Information Requirements

Source Information

ID #	AQD #	Source Name	Source Description	UTM Zone	UTM E	UTM N
	*	#	A	11	8	2

¹ Wyoming Air Quality Division Number to begin with "74"

Production Rates

ID #	Raw Materials	² Max Feed Rate (TPH)	³ Average Production (TPH)	⁴ Production @ Full Load (TPY)	⁵ Design Production (TPY)
	*	2387 ^{TPH} 2387	2387 ^{TPH}	1,407,000	1,200,000

² Maximum Feed Rate assumes 100 percent availability of process equipment

³ Average Production (TPH) takes down-time into account

⁴ Production @ Full Load (TPY) is Max Feed x 8760

⁵ Design Production (TPY) is Average Production x 8760

Dryer 161 137 1,412,000 1,200,000

Emission Point Information Requirements (cont'd)

Stack Exhaust

ID #	Height (ft)	Inside Diameter (ft)	Temp (°F)	Moisture (%)	Velocity (ft/sec)	Flow Rate (DSCFM) ③ ④ ⑤ ⑥	Flow Rate (ACFM)
	X	4	10	7	10	10	10

Pollution Controls/Emission Rates

ID #	Pollutant	⁶ Control Equipment	Efficiency (%)	⁷ Emission Rate (PPH)	Basis of Estimate
X	CO	10	10	10	10

⁶ Control Equipment to include Manufacturer and Model Number

⁷ Emission Rate of all pollutants (to include particulate, NO_x, CO, VOC, and SO₂)

Emission Point Information Requirements (cont'd)

Stack Exhaust

ID #	Height (ft)	Inside Diameter (ft)	Temp (°F)	Moisture (%)	Velocity (ft/sec)	Flow Rate (DSCFM)	Flow Rate (ACFM)

Pollution Controls/Emission Rates

ID #	Pollutant	⁶ Control Equipment	Efficiency (%)	⁷ Emission Rate (PPH)	Basis of Estimate

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Emission Point Information Requirements (cont'd)

Baghouse Specific

ID #	Number and Type of Bags	Bag Filter Area (Ft ²)	Fan Exhaust Rate (ACFM)	⁸ Air:Cloth Ratio	Emission Rate (gr/dscf)

⁸ Air to Cloth Ratio to meet or exceed 5:1

Precipitator Specific

ID #	Inlet Grain Loading (gr/dscf)	Outlet Grain Loading (gr/dscf)	Plate Width (ft)	Plate Height (ft)	Gas Passages per Section	Number of Sections

Burner Specific

ID #	Manufacturer Name	Model Name/Number	NO _x Emission (lb/MM Btu)	CO Emission (lb/MM Btu)

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Best Available Control Technology Determination

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Major Source Determination

- Significant Emission Increase

<u>Pollutant</u>	<u>TPY</u>
Carbon Monoxide	100
Nitrogen Oxides	40
Sulfur Dioxide	40
Particulate Matter	25
PM ₁₀	15
Volatile Organic Compounds	40

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1

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Best Available Control Technology

Federal - Emission limitation based on maximum degree of reduction for each pollutant...taking into account energy, environmental, and economic impacts. ("Top Down" process)

Wyoming - Utilize best available control technology with consideration of the technical practicability and economic reasonableness of reduction or elimination of the emissions resulting from the facility.

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Federal Top Down Process

- Applies to each new (or increased) emission source.
 - » Identify maximum level of control available
 - » compare cost versus pollutant control - \$/ton and Incremental \$/ton comparison
 - » If unreasonable, repeat with next lower level of pollutant control
 - » Short-cut available for smaller sources where one technology is clearly superior

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2

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Available Control technology

- Technology
 - » Technically feasible
 - » Commercially available
- Emission Rate
 - » Demonstrated on similar processes
 - » Economically achievable

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Particulate Controls

Process	Emission Rate	
	<u>lb/ton</u>	<u>gr/dscf</u>
● Gas Fired Dryer	0.03	0.01 ← 0.015
● Gas Fired Calciner	0.06	0.01 ← 0.01
		<u>gr/acf</u>
● Material Handling	-	0.01 - 0.015

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3

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Particulate Test

- Wyoming requires method 202 - EPA particulate train with methylene chloride impingers followed by water impingers.

Particulate measurement based on the filter catch plus the inorganic (water) portion of impingers.

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State BACT Process

- Applies to NOx from the Dryer and Calciner

Identify available options. If not selecting the greatest level of control, compare costs, etc.

- Current demonstrated, and lowest proposed, emission rate is 0.05 lb/mmmbtu

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4

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BACT Summary

Calciner≡ NO_x - 0.05 lb/mmbtu≡ PM₁₀ - 0.06 lb/ton

- 0.015 gr/dscf

Dryer≡ NO_x - 0.05^{1.0} lb/mmbtu≡ PM₁₀ - 0.01 gr/dscf

0.015 gr/dscf

Miscellaneous≡ PM₁₀ - 0.01 gr/acf

0.015 gr/dscf

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BACT Information Required

- For each particulate emission point
 - » alternative controls considered (emission rate and control technology)
 - » alternatives not technically feasible
 - include reasoning
 - » alternatives not economically feasible
 - include capital and operating cost evaluation/comparison.
 - » alternative selected

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5

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BACT Information Required

- For each source of NOx
- alternatives considered
- alternatives selected.
- justification if other than low NOx burners.
- do not need to consider catalysts etc.

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BACT Information Required

- VOC sources:
- Identify if you are aware of any demonstrated control technology.

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6

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